

# better site characterizing with SCAPS



The Navy's Site Characterization and Analysis Penetrometer System (SCAPS) is a self contained, mobile platform designed to characterize many parameters at a variety of hazardous waste contaminated sites. SCAPS uses a combination of unique sensor systems, sample collection tools, and specialized monitoring well systems which provide defensible data for the site investigator. SCAPS' tools are based on cone penetrometer or direct push (soil displacement) techniques. The basic philosophy of the SCAPS characterization process is to gather real-time information in-situ, using small diameter (< 2") sensors and tools, and enable in-field decision making. SCAPS has characterized over 150 Navy sites throughout the country.

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Compared to the typical multi-deployment method of drilling, sampling, and performing laboratory analysis on retrieved samples to characterize a site, the SCAPS process is proven to:

**Cost Less:** case studies show cost avoidance of at least 40% during site characterization.

**Characterize Faster:** real-time data allows 3 dimensional characterization in one deployment. Real-time data and in-field decision making promote expedited or accelerated site characterization practices.

**Provide Superior Data:** contaminant distribution and geotechnical data is typically gathered at vertical resolutions measured in inches, which provide the investigator with a better understanding of complex subsurface conditions. This allows for strategic sampling choices, more accurate risk assessment models, and better engineered remediation systems.

**Close Sites Quickly:** to date, over 20 sites have been closed based on data gathered during single SCAPS deployments.

**Reduce Investigation Derived Waste Cost and Management:** small amounts of decontamination rinse water are produced during field operations, typically a few drums per site. Drill cuttings are not generated.

**Be Safer to Site Workers:** remote decontamination system cleans tooling while exiting the investigation hole and prior to worker contact.

**Promote Environmental Safety:** grouting occurs as tools are retracted from the investigation hole to ensure complete sealing, reducing potential of subsurface cross contamination. Also, small diameter

investigation tools are less intrusive to the environment.

**Provide Full Service:** crews write documents necessary for complete site investigations, including work plans, health and safety plans, project exit and final reports, and provide project management and all field operations. Sites are surveyed with a global positioning satellite (GPS) system.

**Offer Easy Data Management:** GPS surveying and some sensor systems capture data in a PC compatible format, allowing easy data management and direct import into various modeling and mapping softwares.

# the SCAPS tool chest

SCAPS combines innovative site screening sensor technology with cone penetrometer tools to provide data and retrieve samples to completely characterize sites.

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**Hydrocarbon Sensor System** – detects hydrocarbon impacted soil real-time using solid state, laser induced fluorescence (LIF) technology. The LIF process has been accepted by US EPA, California EPA, and many state and local agencies.

**Pore Pressure Probe** – quantifies soil pore pressure for site hydraulic studies, such as direction and rate of groundwater flow and provides discrete values of relative hydraulic conductivity.

**Liquid/Gas Sampler** – extracts liquid or gas samples from the subsurface for further analysis and provides defensible data.

**Soil Sampler** – retrieves soil samples from discrete locations for further analysis and provides defensible data.

**Small Diameter Well Installation** – installs custom designed wells using direct push technology for access to groundwater.

**Geotechnical Sensor** – measures geotechnical properties to determine soil types, which can aid in well construction and remediation system design.

**Video Microscope System** (available FY98) – 100X magnified view of subsurface features for visual analysis and better subsurface understanding.

**Moisture Probe** (available FY99) – quantifies soil moisture content and can aid in calculating hydraulic conductivity.

## for more information

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